

CLAIMS

We claim:

1. A circuit enabling a headphone driver amplifier to operate from a single
5 voltage supply comprising:

an amplifier having an output coupled to a headphone, said amplifier
having a first and a second power supply lead, said first power supply lead
connected to a power supply voltage; and

a DC voltage to voltage converter having an output, said DC voltage
10 to voltage converter having a power source lead connected to the supply
voltage, the output of said DC voltage to voltage converter connected to the
second power supply lead, and said DC voltage to voltage converter
generating an output voltage at the output that is substantially equal in
magnitude to some negative quanta of the power supply voltage.

2. The circuit of claim 1 connected to a common ground by two external
15 capacitors in the range of 0.47 to 3.3 micro farads.

3. The circuit of claim 1 wherein the DC voltage to voltage converter is a
20 charge pump circuitry.

4. The circuit of claim 1 wherein the DC voltage to voltage converter is an
inductor based voltage to voltage converter.

5. The circuit of claim 1 wherein the power supply voltage is a positive
25 voltage.

5 6. The circuit of claim 1 wherein the power supply voltage is a negative voltage.

7. An amplifier circuitry for directly driving stereo headphones, said amplifier circuitry being driven by a single supply voltage VDD, said
10 amplifier circuitry comprising:

a first and a second amplifier, the first amplifier having an output directly coupled to a first headphone and the second amplifier having an output directly coupled to a second headphone, each of the first and second amplifier having a VDD power supply lead connected to a positive voltage
15 supply VDD; and

a charge pump circuitry output connected to a $-VDD$ supply voltage of the first and second amplifier, wherein said charge pump circuitry output provides a voltage substantially equal in magnitude to the negative value of the VDD supply, said charge pump further having a power supply lead
20 connected to the VDD supply voltage.

8. An portable amplifier system operative with a single voltage supply VDD, for directly driving a headphone comprising:

signal amplifying means for driving a headphone, said amplifying
25 means output directly coupling the headphone, said amplifying means biased to ground voltage; and

negative voltage generator means for inverting an input voltage supply VDD to an output voltage supply $-VDD$ of equal magnitude but opposite sign, said voltage supply generator means output coupled to the negative
30 voltage lead $-VDD$ of said amplifying means.

5 9. A headphone system operative with a single positive supply voltage
comprising:
at least one headphone,
signal amplifying means driving the headphone, said amplifying
means is directly coupled to the headphone and biases the headphone at zero
10 volts; and
a negative voltage generator means providing a negative voltage
substantially equal to but negative in magnitude to the positive voltage
supply.

15 10. A circuit enabling a driver amplifier to operate from a single voltage
supply comprising:

an amplifier having an output driving a load, said amplifier having a
first and a second power supply lead, said first power supply lead connected
to a supply voltage; and

20 a DC voltage to voltage converter circuitry having an output, said DC
voltage to voltage converter circuitry having a power source lead connected
to the supply voltage, the output of said DC voltage to voltage converter
circuitry connected to the second power supply lead and said output being
substantially equal in magnitude to some negative quanta of the power
25 supply voltage.

11. A method of directly driving a load in a portable device operative off of
a single voltage supply VDD comprising:

driving a headphone using a signal amplifying means having an
30 output, wherein said output directly coupling the headphone, said amplifying
means biased to ground voltage; and

5 inverting an input voltage using a negative voltage generator means
for inverting a voltage supply VDD to an output voltage, said output voltage
being substantially equal to some negative quanta of the voltage supply
VDD, said negative voltage supply generator means output coupled to the
negative voltage lead $-VDD$ of said amplifying means.

10